



# **The DoD EHR: Mapping the “Way Ahead” for AHLTA**

**HIMSS 2009 Annual Conference**

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**COL Claude Hines, Jr.**  
**Program Manager, DHIMS**



### ■ **DHIMS Outpatient Project Line Manager**

- Manages DHIMS' \$560 million annual acquisition budget and 300+ personnel
- Manages AHLTA, the military's electronic health record

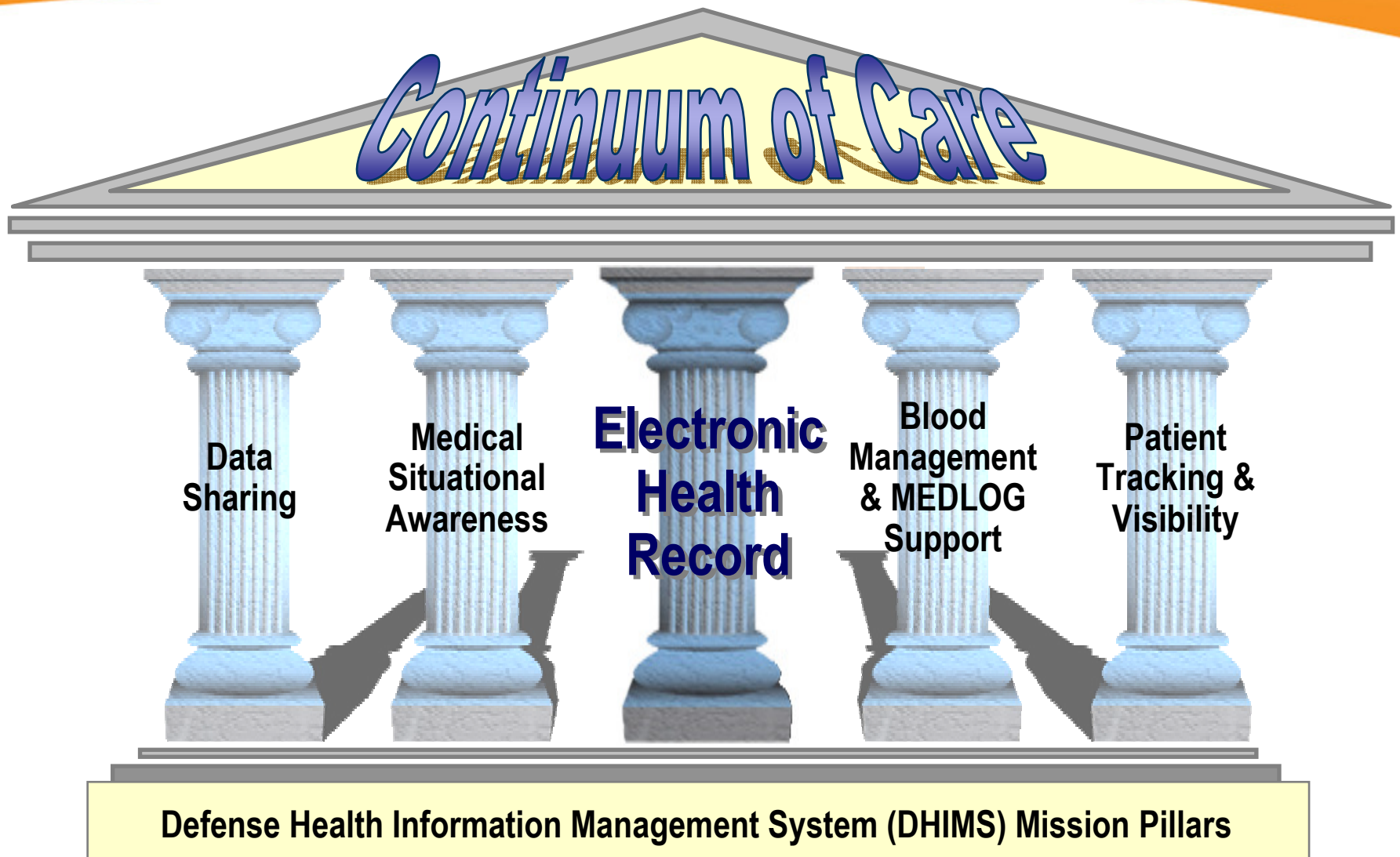
### ■ **Program Accomplishments**

- Deployed Theater Medical Information Program – Joint (TMIP) Block 1 Software for the U.S. Army at the onset of Operations Iraqi Freedom and Enduring Freedom
  - Fielded TMIP software to over 175 units in the Army, Navy, Marine Corps and Air Force
- Successfully merged Theater Medical Data Store (TMDS)/Joint Patient Tracking Application (JPTA)
- TMIP Block 2 Release 1

## DHIMS Vision

***“To provide a world class health information management system that seamlessly captures, manages and shares health information in support of the military's electronic health record for our Service Members, their families, Combatant Commands and the user community”***

# Mission Pillars



# DHIMS IM/IT Areas of Responsibility

- **Ancillaries**
  - Laboratory, Radiology, Pharmacy
- **Blood Management**
- **Case Management**
- **Clinical Decision Support**
- **Consults/Referral Management**
- **Dental**
- **DoD/VA Data Sharing**
- **Health Surveillance**
- **Imaging**
- **Inpatient**
- **Longitudinal Health Record**
- **Medical Command and Control**
- **Medical Planning**
- **Medical Readiness**
- **MEDLOG Support**
- **Order Entry/Results Retrieval**
- **Outpatient**
- **Patient Administration**
- **Patient Tracking**
- **Personal Health Record**
- **Population Health**
- **Preventive Health**
- **Spectacle Requisition**
- **Tele-Health**
- **Theater Occupational/  
Environmental/Radiological  
Health**
- **Trauma Registry  
Documentation**
- **Traumatic Brain Injury/  
Behavioral Health (TBI/BH)**
- **Utilization Management**
- **Veterinary Medicine**
- **Workload Accounting**

# Diversity of Skills

## ■ Approximately 300 multi-disciplinary dedicated professionals (Military, Public Health Service, Government Civilians, and Contractors)

### ■ Clinicians

- Physician
- Physician Assistant
- Nurses
- Dentist
- Dental Assistant
- Physical Therapist
- Pharmacist
- Lab Officer
- Dietitian
- Optometrist
- Social Worker

### ■ Administrator

- Medical Logistician
  - Health Service Maintenance Technician
- Healthcare Administrator
- Finance/Contracting
- Strategic Communications

### ■ Technical

- Medical Information Systems Officer
- Engineers
- Information Assurance
- Risk Management
- Quality Assurance
- Configuration Management
- Architecture
- Testers

## ■ Acquisition trained staff

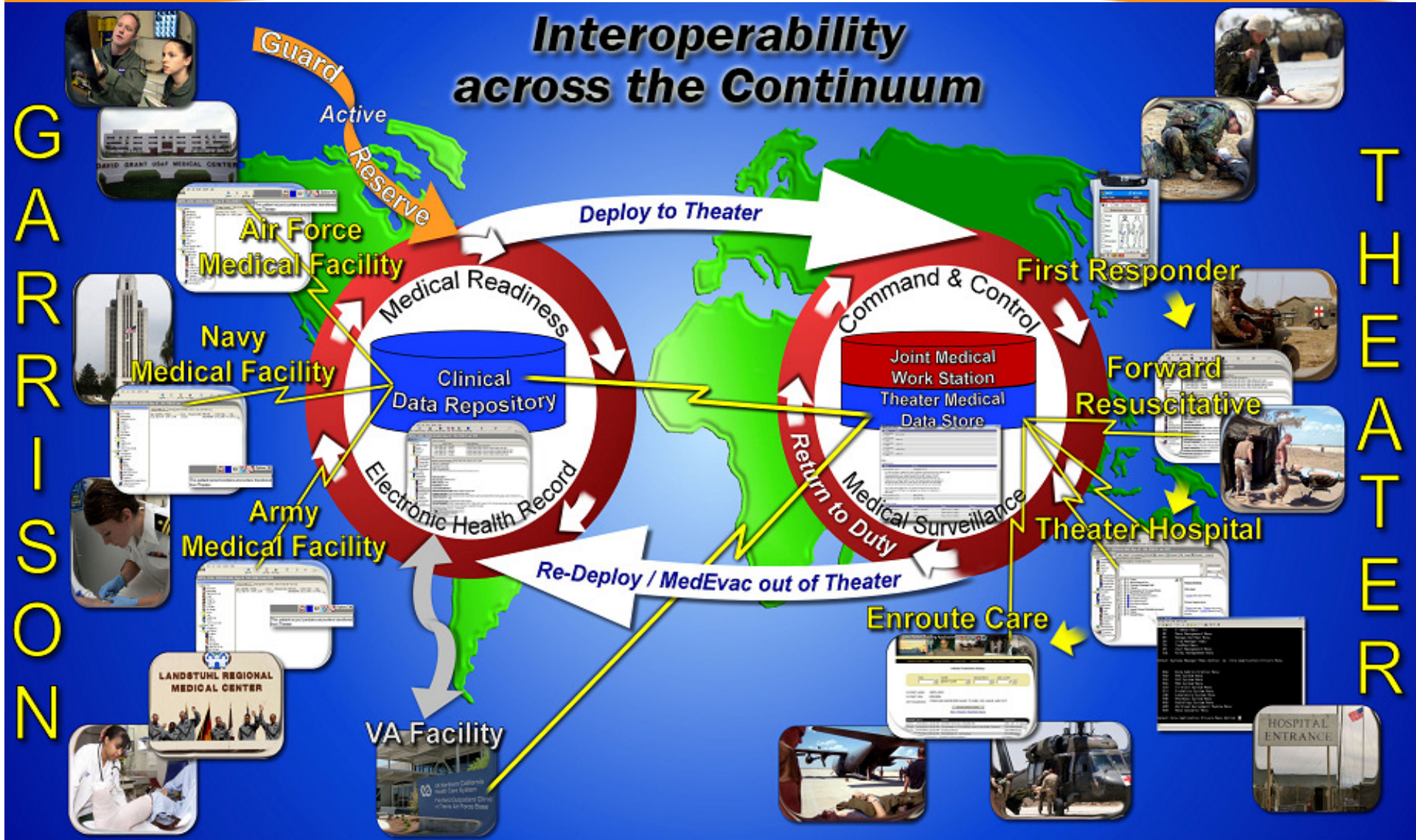
- PMP; ACQ Level I, II, and III; CPHIMS



# Service Member Health Care Continuum From *Recruitment to Transition to Veteran Care*



# Operational View





# Sustaining Base EHR Footprint Today

## ■ AHLTA – Worldwide

- Covers 24 time zones
- Averages 112,000 additional encounters per day
- 9.2 million beneficiary records
- Over 110,000 EUDs
- US Capitol

## ■ Essentris

- 21 Sites (12 MHS)
- 57% Inpatient Beds

## ■ Military Treatment Facilities

- 63 Hospitals
- 826 Medical & Dental Clinics

## ■ Workload Each Week

- 664,000 Outpatient Encounters
- 2.1M Prescriptions
- 18,500 Inpatient Admissions
- 2,240 Births

***Supporting transient patient populations  
and transient healthcare teams***

# DHIMS Sustaining Base Systems and Projects Overview

## ■ **AHLTA**

- AHLTA 3.3, and 4.0 Convergence
- AHLTA Dental
- Health Assessment Review Tool (HART)
- Army Medical Department (AMEDD) Sponsored Enhancements
- Clinical Data Repository (CDR) Upgrade for Oracle and Tuxedo
- Theater Medical Data Integration (TMDI)
- Wounded Warrior Initiatives

## ■ **Data Sharing**

- Federal Health Information Exchange (FHIE)
- Bidirectional Health Information Exchange (BHIE)
- Clinical Data Repository/Health Data Repository (CHDR)
- NDAA El Paso DoD/VA Image Sharing Project

## ■ **Essentris**

## ■ **Legacy Composite Health Care System (CHCS)**

## ■ **Healthcare Artifact and Image Management Solution (HAIMS)**

# Sustaining Base Challenges

## ■ Development of functional requirements

- Business process
- Capability gaps
- Cost estimates
- Competing Stakeholders

## ■ Maintainability/Interoperability

- System band aids/Quick fixes
- Training and Support
- Unplanned insertions
- Service unique applications
- Dependent upon external partners (e.g. Defense Information Support Agency (DISA), Tri-Service Infrastructure Management Program Office (TIMPO), Services)
- Legacy/antiquated hardware/software

## ■ Acquisition Process

- MHS contracting process
- OPTEMPO
- DBT Certification
- Information Assurance

## ■ Enterprise Architecture

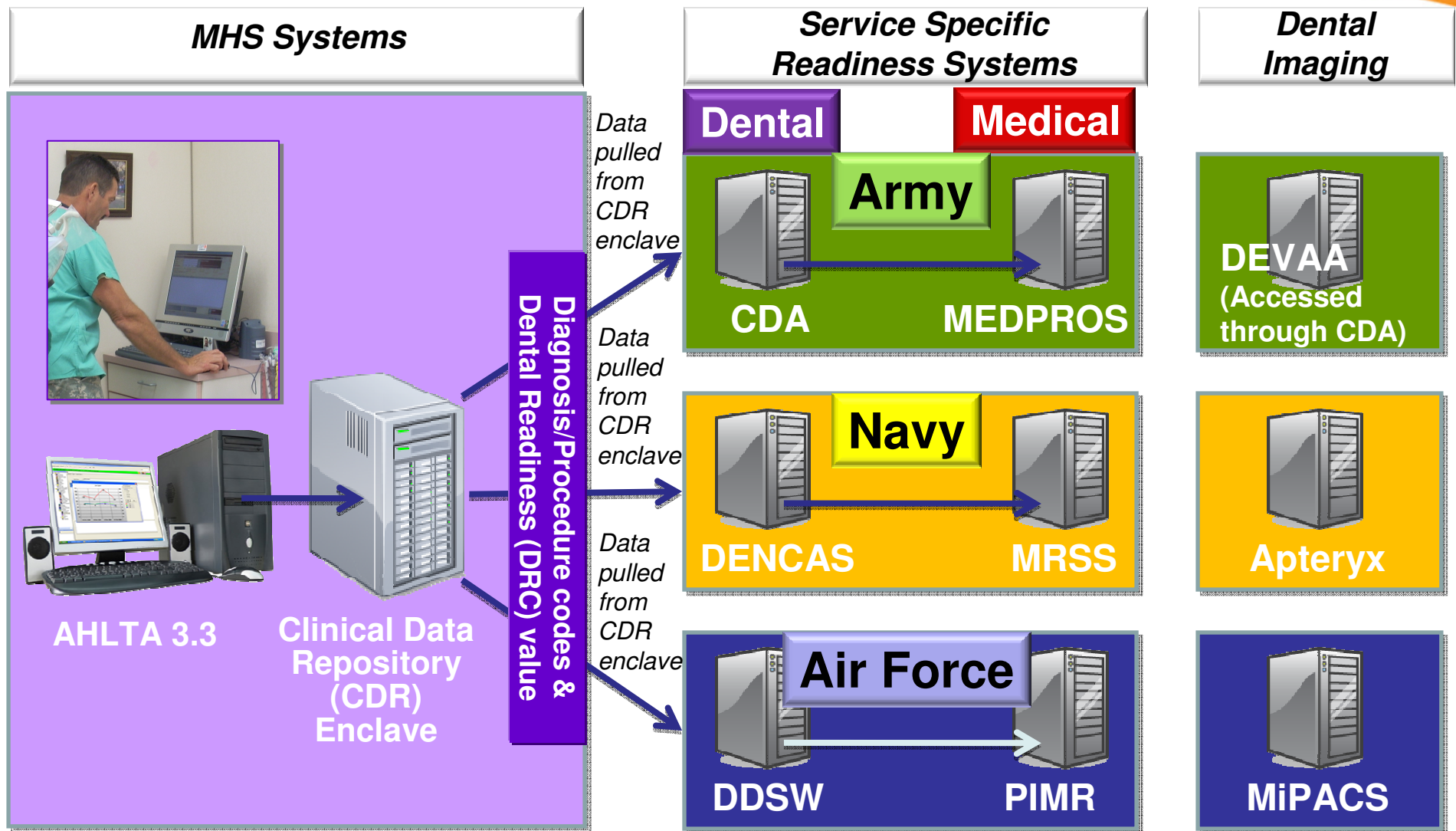
- Many single points of failure
- Complicated due to band aid fixes

## AHLTA 3.3 Highlights

- A noticeable increase in the speed in the transition time between encounter sub-modules
- Health history modules always present for viewing
- Improved telephone consults module improving workflow
- Streamlined alerts and notifications
- Improved coding support
- Management of default templates and problem lists
- Ability to digitally capture patient signatures
- Pediatrics growth charts and age appropriate vital signs
- Obstetrics (OB) Summary module providing relevant current and past pregnancy information
- Availability of the Post-Deployment Health Reassessment as a tab in the deployments module
- Eyewear order entry and tracking support
- Ability to document dental care as part of the medical record



# AHLTA 3.3: Dental



# MHS Interim solution for inpatient documentation (Brand name or equal to Essentris)

## ■ Capabilities

- Computerized Provider Order Entry module
- Critical Care module
- Perinatal and Fetal Surveillance module
- Medical-Surgical module
- Peri-Operative module
- Behavioral Health module
- Emergency Department module
- Outbound laboratory, radiology and medication orders to CHCS
- Inbound laboratory results from CHCS
- BHIE Data Sharing with AHLTA & VISTA
- Ad hoc reporting

## ■ Deployment

- Fielded to 21 Sites (12 by MHS); 57% of inpatient beds
- Contract action in the works for 22 additional sites + 4 additional sites deployed by the Army (92% inpatient beds)

## ■ Unfinanced CLIN for Theater version

# Healthcare Artifact and Image Management Solution (HAIMS): Phase I

- **Develop a web-based solution which provides DoD healthcare providers the capability to have global access and global awareness of artifacts and images generated during the healthcare delivery process**
  - Import, Register, Save, Search, View and Edit multiple file types
    - Pictures
    - Audio
    - Video
    - PDF
    - MS Office
  - Provide global storage capability for artifacts and images captured using HAIMS
    - Leverage current Services' Picture Archiving Communication System (PACS) as a source of radiographic images
  - Make the described artifacts and images available for the VA
  - Expose Deployable Tele-Radiology System (DTRS) images to the Enterprise

# Theater Footprint Today

- **TMIP products Operational in White House Medical Unit (WHMU)**
- **OIF/OEF**
  - ▣ TC2 - 5,623,570 Total Workload
  - ▣ AHLTA-Theater - 2,276,093 Total Encounters
- **Iraq:** 9 Theater Hospitals / 150+ Forward Resuscitative sites
  - ▣ U.S. Embassy Clinic in Baghdad, IRAQ
- **Qatar:** 1 Theater Hospital
- **Kuwait:** 1 Theater Hospital / 8 Forward Resuscitative sites
- **Afghanistan:** 2 Theater Hospitals / 50+ Forward Resuscitative sites
- **Djibouti:** 1 Theater Hospital equivalent
- **USS Ronald Reagan (CVN 76)**
- **USS John C. Stennis (CVN 74)**
- **17 sites now fielded with TC2**



# TMIP Systems and Projects Overview

- **TMIP Block 2 Release 1**
- **Medical Situational Awareness in the Theater (MSAT)**
- **AHLTA**
  - Theater
  - AHLTA 4.0 Convergence
  - Mobile
  - Warrior
- **LOA 2b: Automated Neuropsychological Assessment Metric (ANAM)**
- **Theater CHCS Cache (TC2)**
- **Theater Medical Data Store (TMDS)**
- **Joint Medical Workstation (JMEWS)**
- **Defense Medical Logistics Standard Support (DMLSS)**
- **DMLSS Customer Assistance Module (DCAM)**
- **Patient Movement Items Tracking System (PMITS)**
- **Deployable Tele-Radiology System (DTRS) LOA 4b:Theater Imaging**
- **Joint Medical Analysis Tool (JMAT)**
- **Shipboard Non-tactical Automated Data Processing Program (SNAP) Automated Medical System (SAMS)**
- **Defense Occupational and Environmental Health Readiness System (DOEHRS)**
- **Theater Single Sign on and Clinical Context Management**
- **Expeditionary Framework**

# Theater Challenges

- **Development of functional requirements**
  - ▣ Business process
  - ▣ Capability gaps
  - ▣ Cost estimates
  - ▣ Competing Stakeholders
- **Maintainability/Interoperability**
  - ▣ System backward compatibility
  - ▣ Training and Support
  - ▣ Unplanned insertions
  - ▣ Service unique applications

- **Acquisition Process**
  - ▣ MHS contracting process
  - ▣ OPTEMPO
  - ▣ Information Assurance
- **Communications and Bandwidth**
  - ▣ Inconsistent bandwidth
  - ▣ Theater security policies
- **Theater Digital Tele-Radiology Systems**
  - ▣ Level III Support
  - ▣ Movement and Storage at Level IIs
  - ▣ Dental Radiographs

# TMIP Block 2 Release 1 (B2R1)

## Originally Planned:

- AHLTA-Mobile 1.9.8\*
- AHLTA-Theater 301.9\*
- JMeWS 2.2.4.1\*
- Business Objects (Ad Hoc Reporting) 6.5.1
- \* Newer Version Than Planned

## Development Added to Block 1:

- TMIP Composite Health Care System Caché (TC2) 1.0.0.0
- TMDS with JPTA functionality 2.2.4.1
- DMLSS Customer Assistance Module (DCAM) 1.1.106.0
- TRANSCOM Regulating and Command & Control Evacuation System (TRAC2ES) Interface

## Other Products:

- Patient Movement Items Tracking System (PMITS) 1.0.2
- Shipboard Non-tactical Automated Data Processing Program (SNAP) Automated Medical System (SAMS) 029-9.02.00

**Environment: Windows XP Professional/Server 2003 Oracle 10g**

**Sustain Block 1 until the Services migrate to Block 2**

**Released to Service Infrastructure Program Offices October 2006**

**OT completed 5 February 2008/ FDR approved 4 December 2008**

# TMIP Block 2 Release 1 (B2R1) Highlights

## ■ Technical Refresh

- Windows XP
- Oracle 10G
- Software Code Modernization
- Interface Enhancements

## ■ AHLTA-Theater: Outpatient Treatment Documentation

- Alternate Input Method (AIM) Forms
- Military Acute Concussion Evaluation (MACE) Forms
- SAMS demographic interface – SAMS electronically monitors the environment and health of crew/embarked personnel
- Limited inpatient capability for Forward Resuscitative (Level II)
- Off-line demographic verification

## ■ AHLTA-Mobile: First Responder Application

- Tablet/desktop version
- Encryption of data at rest

## ■ TC2: Inpatient Treatment Documentation

- MEDWEB Demographics interface with TC2

## ■ MEDCIN Codes



## **TMDS Recent Enhancements**

- **Access to Bi-directional Health Information Exchange (BHIE) through Secure Healthcare Alliance Record Exchange (SHARE) Interface via Landstuhl (LRMC)**
  - Allows Theater providers to access LRMC CHCS data to retrieve lab results from test sent to LRMC
  - Allows access to health history
    - Data from DoD/VA
  - Single sign on capability
    - With TMDS and SHARE
- **Mild Traumatic Brain Injury (mTBI) tracking**
- **Common Access Card (CAC) enabled**

# Deployable Tele-Radiology System (DTRS)

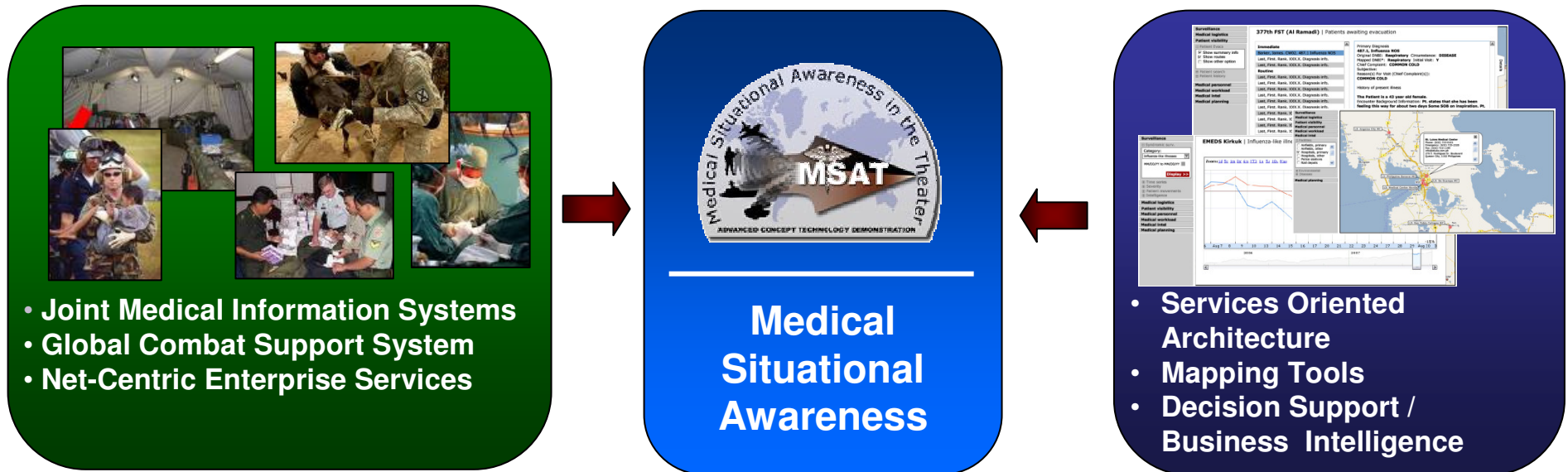
- **Provides deployed healthcare providers access to radiographic images for Tele-radiology in OEF/OIF**
  - Allows for transfer of images back to definitive care when sufficient bandwidth is available
- **DHIMS is the central manager for 19 DTRS sites in OEF/OIF**
  - Includes onsite field service reps in Kuwait, Afghanistan and Iraq
  - Refreshing hardware for 7 sites

# Ongoing Theater Initiatives

- **Automated Neuropsychological Assessment Metric (ANAM)**
  - Neurocognitive Assessment Tool
  - Enhancing ANAM to enable baseline and post-event screening of possible Traumatic Brain Injury (TBI) across the Enterprise at all echelons of care
- **AHLTA 4.0 (Convergence)**
  - Converges the AHLTA-Theater Block 2 Release 1 Baseline with the Sustaining Base AHLTA 3.3 Baseline into a single functional baseline
  - Includes SAMS and GEMS functionality (e.g. Navy IMR, SAMS/GEMS E-Forms, Personnel Reliability Program (PRP) and Not Involving Flying/Including Flying (DNIF))
  - Provides capability enhancements (e.g. North Atlantic Treaty Organization (NATO) Triage Module) and new functionality (e.g. injury cause codes, Lotus forms)
- **Joint Medical Analysis Tool (JMAT) v2.0**
  - Provides Medical Resource Requirements Estimation and Course of Action Analysis (COAA) for COCOM Surgeons' Staff
  - Re-engineering the standalone JMAT v1.0.1.0 application to a collaborative web-based tool

# Medical Situational Awareness in the Theater (MSAT)

**Provide COCOM and JTF Surgeons and their staffs actionable knowledge and enhanced medical situational awareness for critical decision making**



Leveraging existing success  
and emerging capabilities

*to*

Support Decision  
Making

*and*

Empower commanders  
with Actionable Knowledge



# MHS IM/IT System Challenges

## MHS Enterprise Architecture

- **Fragmented enterprise architecture**
  - ▣ Legacy software solutions
    - Dependent upon aging non-standard hardware
  - ▣ Test environment challenges
- **Multiple single points of failure**
  - ▣ MHS, Services, Military Treatment Facilities, and DISA
  - ▣ Some are not associated with EHR (e.g. power outage)
    - Creates negative perception of AHLTA's reliability
- **Communication challenges**
  - ▣ Base and facility networks
    - Command and Control
  - ▣ Priority for Network bandwidth

## MHS IT System

- **EHR information management**
  - ▣ Rapidly expanding data storage needs surpassing present capability
  - ▣ Lack of reliability
  - ▣ Interoperability and data sharing challenges
- **Resource intensive system**
  - ▣ Client-server based systems
  - ▣ 150+ uniquely configured servers supporting 700+ facilities worldwide
  - ▣ Custom and non-standard interfaces
- **Legacy applications written in antiquated code**
  - ▣ Limited extensibility
  - ▣ Limits enhancements and improvements
- **Capability Gaps**

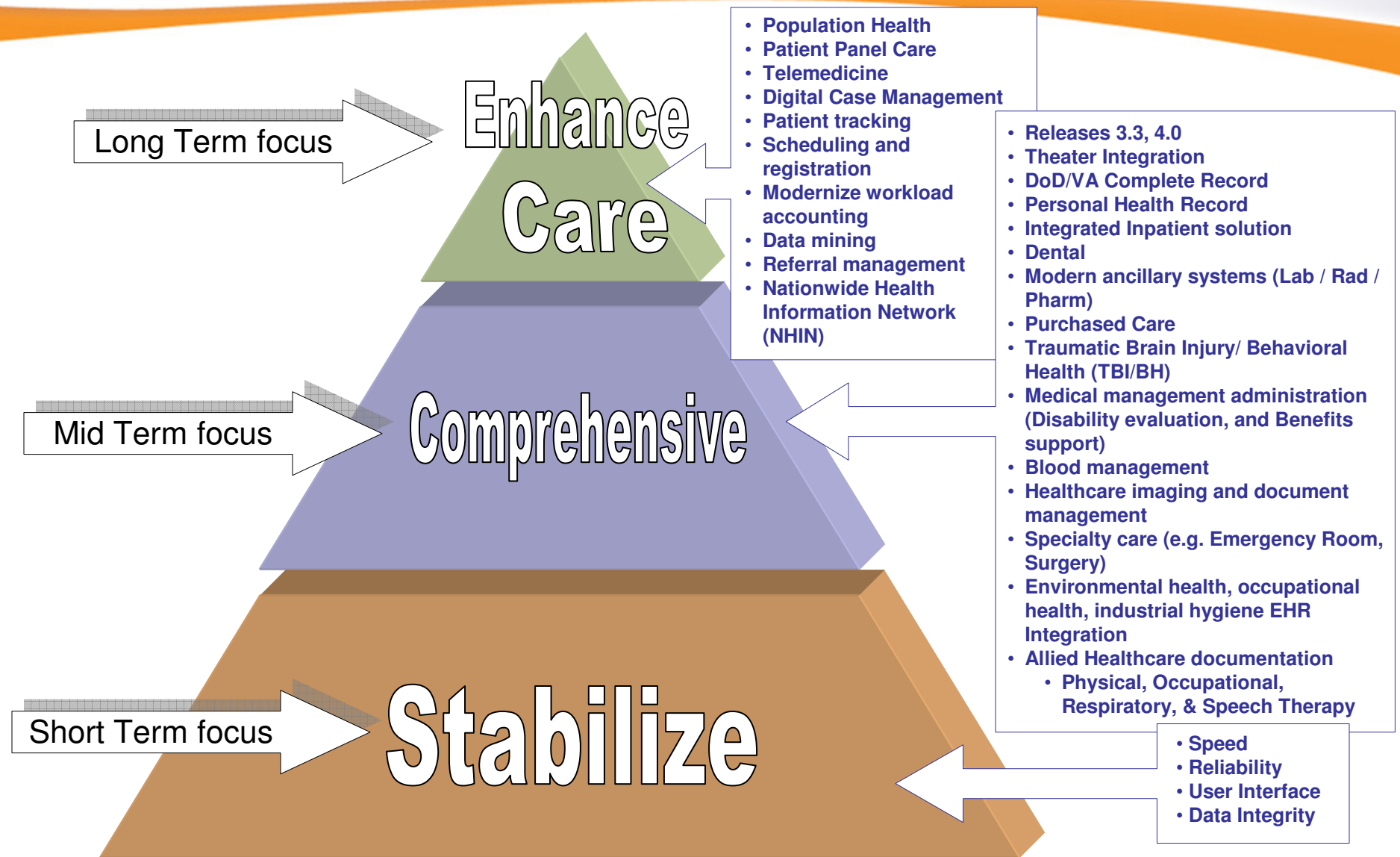
## Way Ahead: MHS IT Enterprise Architecture

- **Identify Enterprise Architecture and EHR challenges**
- **“Red Team” further define issues and formulate plan**
- **Blueprint future Enterprise Architecture and EHR with DoD partners and industry**
- **Optimize trusted vendor pool and contracts**
- **Reprioritize MHS resource and funding to support the strategy**
- **Stabilize current enterprise architecture and accelerate resolution of AHLTA/EHR issues**
- **Demonstrate incremental improvements**
  - ▣ **Funded initiatives**
  - ▣ **Begin modernizing and improving the current legacy systems**
- **Utilize innovative partnerships**
  - ▣ **Triple Helix – Partners with Industry, Academia, and Government**
- **Execute Blueprint of MHS Enterprise Architecture and EHR**

# MHS Enterprise Architecture Strategy: Tenets

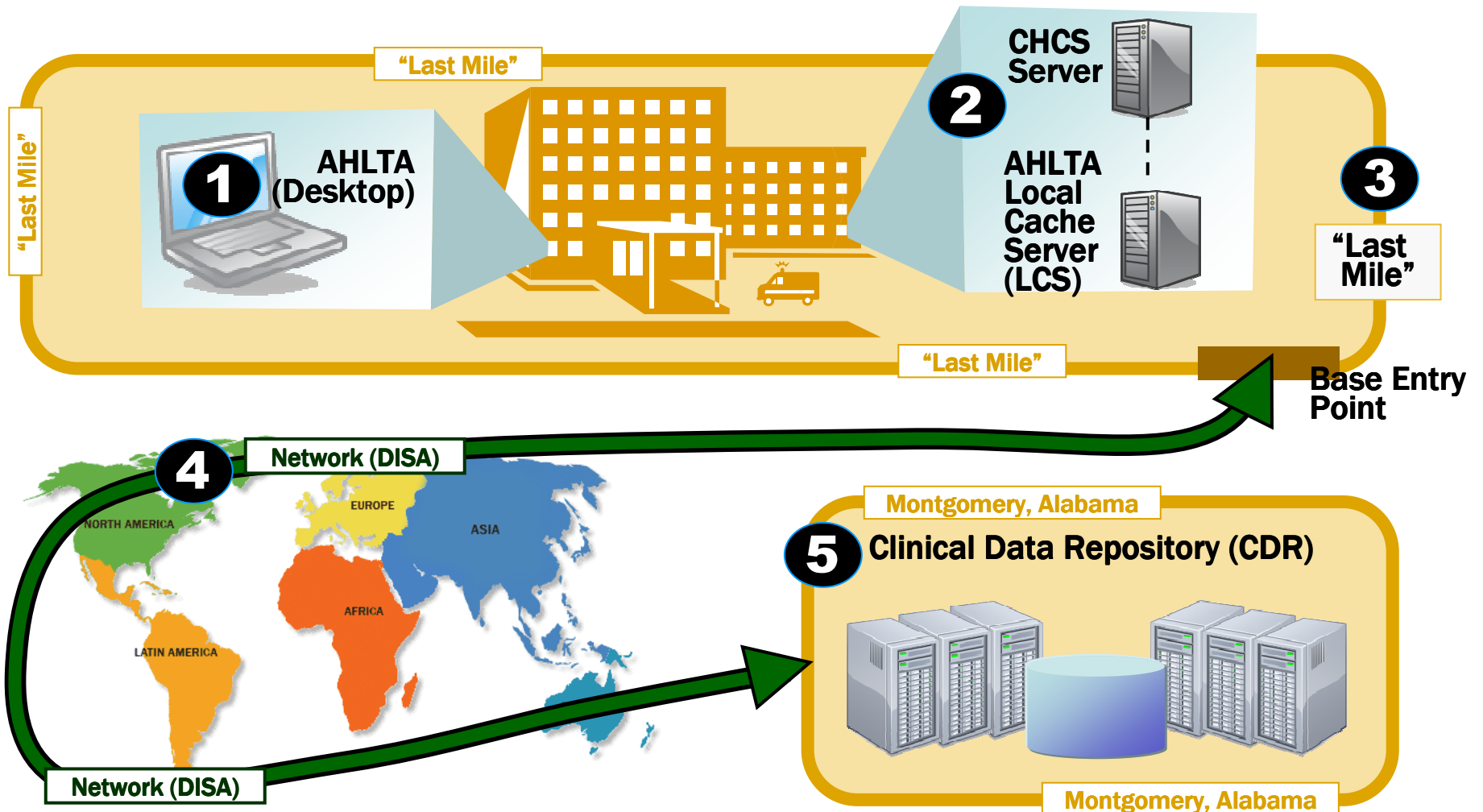
- **Meet the Mission**
- **User friendly**
- **Stabile and reliable**
- **Agile development to better meet changing requirements**
- **More modular, scalable and portable products (e.g. plug n play)**
- **Retire or modernize legacy products**
- **Loosely couple technology**
- **Re-use Technology**
- **Optimize Infrastructure (e.g. bandwidth)**
- **Regionalize information stores**
- **Use standards based approach for greater interoperability**

# Electronic Health Record - Strategy



# Electronic Health Record - Stabilization

## 5 Points of Focus to Ensure Rapid Stabilization



# EHR Strategy: Summary

## ■ Stabilize

- Get the basics right & measure progress from user perspective
- Address current system issues
  - Measure and Increase overall system reliability
  - Measure and Increase user system response times
  - Increase usability
  - Increase data integrity
- Stabilize with the future in mind
  - Blueprinting will guide investment decisions

## ■ Comprehensive

- Augment current functionality to provide a more complete EHR
  - Priorities driven by functionals
- Design for 'Plug & Play' ... with a plan for 'unplug'
- One system from user perspective

## ■ Enhance Care

- Realize the benefits of an overarching EHR to include
  - Increased quality of patient care
  - Enhance decision-making
  - More efficient use of resources



## Questions???

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- The DoD/MHS Booth number is 3668